

REMARKS/ARGUMENTS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully submitted.

Claims 20-24 are pending in the present application. Claims 1-19 have been cancelled without prejudice and Claims 20-24 have been added by the present amendment.

In the outstanding Office Action, Claim 10 was objected to; Claim 18 was rejected under 35 U.S.C. § 112, second paragraph; Claims 1-7 were rejected under 35 U.S.C. § 103(a) as unpatentable over Alamouti et al. (U.S. Patent No. 5,933,421, herein "Alamouti") in view of Wong et al. (IEEE Transactions on Communications, "Adaptive Antennas at the Mobile and Base Stations in an OFDM/TDMA System," herewith "Wong"); Claims 8-12, 15, and 19 were rejected under 35 U.S.C. § 102(b) as anticipated by Alamouti; and Claims 13, 14, 16, 17, and 18 were rejected under 35 U.S.C. § 103(a) as unpatentable over Alamouti in view of Wong.

Regarding the outstanding objection and rejections, Claims 1-19 have been cancelled and new Claims 20-24 are presented. Independent Claim 20 includes features of originally filed Claims 1, 2, and 7 and new features. No new matter has been added. In the following, new independent Claim 20 is discussed in regard to the applied art.

Briefly recapitulating, Claim 20 is directed to a receiver apparatus provided with a smart antenna capable of adjusting a directivity of the smart antenna by making use of a plurality of antenna elements. The receiver apparatus includes, inter alia, a pilot signal extraction unit which intermittently extracts signals carried on pilot sub-carriers having predetermined center frequencies, an antenna weight calculation unit that calculates an antenna weight of each antenna element corresponding to each of sub-carrier groups, and a timing controlling unit which is connected to the pilot signal extraction unit and the antenna weight calculation unit. The timing controlling unit supplies timing signals to the pilot signal

extraction unit and the antenna weight calculation unit in order that an antenna weight of each antenna element is switched for each sub-carrier group in a cyclic manner.

Therefore, the receiver apparatus of Claim 20 by using the smart antenna advantageously reduces an amount of computation tasks required for the weight set calculation since there is no need for calculating the weights for all the sub-carriers if one set of weights is calculated for a plurality of sub-carriers belonging to each sub-carrier group. By using this configuration, the receiver apparatus of Claim 20 processes signals in real time without resort to a high speed DSP or CPU and without increasing the scale of the circuitry.

Turning to the applied art, the outstanding Office Action asserts with regard to Claim 7, that Alamouti discloses at column 25, line 35, to column 26, line 14, a timing controlling unit that supplies timing signals. Assuming arguendo that the above noted assertion is correct, Applicants note that Alamouti does not teach or suggest that the timing controlling unit supplies timing signals such that an antenna weight of each antenna element is switched for each sub-carrier group in a cyclic manner as required by new Claim 20.

The outstanding Office Action relies on Wong for teaching various features missing in Alamouti and unrelated to the claimed timing controlling unit. However, Wong does not cure the deficiencies noted in Alamouti with regard to Claim 20.

Accordingly, it is respectfully submitted that independent Claim 20 and each of the claims depending therefrom patentably distinguish over Alamouti and Wong, either alone or in combination.

Consequently, in light of the above discussion and in view of the present amendment, the present application is believed to be in condition for allowance and an early and favorable action to that effect is respectfully submitted.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.



Eckhard H. Kuesters
Attorney of Record
Registration No. 28,870

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413 -2220
(OSMMN 06/04)

Remus F. Fetea, Ph.D.
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